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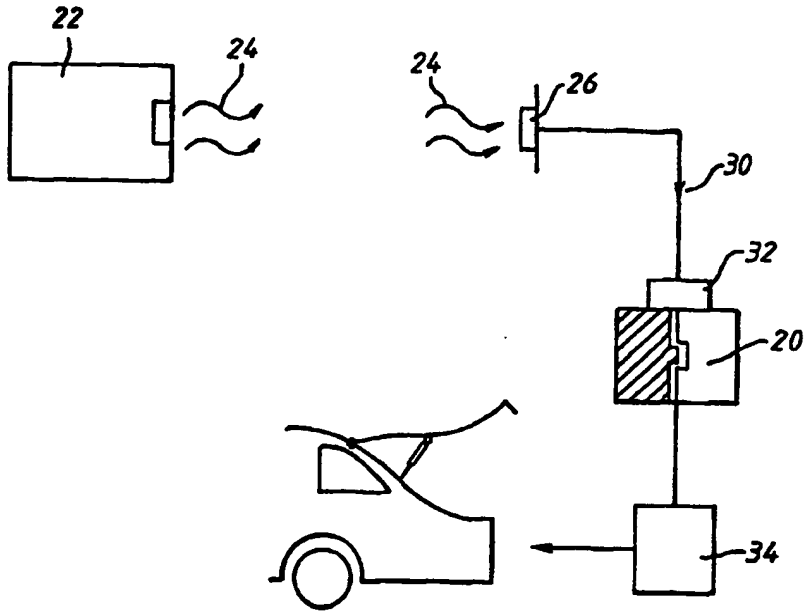

(57) Abstract

An arrangement and method for remotely unlocking and raising the hatchback (12) of a motor vehicle (10) is described. Firstly, a signal (24) is sent to unlock and unlatch the vehicle hatchback (12). The unlatched hatchback (12) is automatically raised by an amount sufficient to allow gas springs (18) to complete the raising operation. The gas springs (18) may incorporate a device to prevent the hatchback being fully raised.

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OPENING ARRANGEMENTS AND METHODS FOR CLOSURE MEMBERS

The invention relates to a closure opening method, comprising the steps of emitting a signal from a remote location; detecting the signal; and causing an unlatching mechanism to be operated.

The invention further relates to a remotely operable closure opening arrangement, comprising a releasable latching mechanism for latching the closure in the closed position, signal emitting means for emitting an opening signal from a remote location, and detecting means for detecting the signal and releasing the latching mechanism.

Such arrangements and methods are shown in US 4,796,932. In this system, for remotely releasing a motor vehicle compartment panel, a remote release and pull down unit is provided which allows the panel to be unlatched and pulled down enabling the user to unlatch and latch the panel remotely. However, it is desirable to produce a closure opening arrangement in which the panel is opened by a predetermined amount in a controlled fashion.

Accordingly, the known method is characterised by the steps of opening the closure to an initial extent sufficient for a controlled opening mechanism to become operative and causing the closure to be opened by the controlled opening mechanism to a predetermined greater extent.

Furthermore, the known arrangement is characterised by initial opening means responsive to release of the latching mechanism to open the closure to an initial position, and a controlled opening

mechanism operative to open the closure from the initial partially open position to a predetermined greater extent.

Hatchback and luggage compartment opening arrangements, embodying the invention, for use in motor vehicles will now be described, by way of example only, with reference to the accompanying diagrammatic drawings in which:

Figure 1 is a side view of the rear of a motor vehicle showing the hatchback in a closed position;

Figure 2 is a side view of the rear of a motor vehicle showing the hatchback in a fully raised position; and

Figure 3 is a schematic block diagram of the controls of an embodiment of the invention.

The motor vehicle 10 has a hatchback 12 pivotally attached to the body of the vehicle 14 by hinges 16. The hatchback 12 is retained in the closed position by means of a latch and a locking mechanism 20. The latch and locking mechanism 20 can be operated remotely by a portable key device 22 (see Figure 3).

Gas springs 18 (Figure 2, which shows only one of the gas springs) are provided for lifting the hatchback 12 and retaining it in the open position.

To open the hatchback, in accordance with the invention, the operator presses the appropriate button on the separate key device. A suitable signal (such as an infra-red or radio signal) is accordingly emitted by the key device 22 which in turn is

detected by a detector 26. The detector 26 emits a signal on a line 30 that activates a component 32 to unlock the latch mechanism 20.

A spring 34 or any other suitable means then raises the unlatched hatchback 12 slightly and to a level where the gas springs 18 can become operative and raise the hatchback.

The control unit 32 can be part of the central door locking system. However, preferably it can cause the hatchback to open independently of the other vehicle doors.

Additionally, the key device 22 may have other functions such as unlocking the central door locking or arming the vehicle alarm and need not be solely for raising the hatchback.

Furthermore, it will be appreciated that the vehicle need not be a hatchback motor vehicle, and the vehicle part to be opened need not be the hatchback, but could for example be another closure member which is opened by a gas spring or similar means when unlatched, such as the lid of a luggage compartment.

In a modified embodiment of the invention, the gas springs 18 allow the hatchback 12 to be raised only to a certain predetermined intermediate level less than the fully open position. This reduces the risk that the hatchback 12 will be damaged by contacting a low roof or other obstruction. The hatchback can thereafter be caused to rise to the fully open position if desired, by manual force or by further unlatching action.

CLAIMS

1. A closure opening method, comprising the steps of emitting a signal (24) from a remote location; detecting the signal (24); and causing an unlatching mechanism (20) to be operated; characterised by the steps of opening the closure (12) to an initial extent sufficient for a controlled opening mechanism (18) to become operative; and causing the closure (12) to be opened by the controlled opening mechanism (18) to a predetermined greater extent.

2. A method according to claim 1, characterised in that the predetermined extent to which the closure (12) is opened by the controlled opening mechanism (18) is less than the fullest extent of opening.

3. A method according to claim 2, characterised in that the closure (12) can be opened to the fullest extent from the predetermined extent.

4. A remotely operable closure opening arrangement, comprising a releasable latching mechanism (20) for latching the closure in the closed position, signal emitting means (22) for emitting an opening signal (24) from a remote location, and detecting means (26) for detecting the signal (24) and releasing the latching mechanism (20), characterised by initial opening means (34) responsive to release of the latching mechanism (20) to open the closure (12) to an initial position, and a controlled opening mechanism (18) operative to open the closure from the initial partially open position to a predetermined greater extent.

5. An arrangement according to claim 4, characterised in that the predetermined greater extent to which the closure (12) is opened by the controlled opening mechanism (18) is less than the fullest extent of opening.

6. An arrangement according to claim 5, characterised in that the closure (12) can be opened to the fullest extent from the predetermined extent.

7. An arrangement or method according to any preceding claim characterised in that the signal (24) is an infra-red signal.

8. An arrangement or method according to any preceding claim characterised in that the signal (24) is a radio signal.

9. An arrangement or method according to any preceding claim, characterised in that the unlatching mechanism (20) is part of a central door locking system in a motor vehicle (14).

10. An arrangement or method according to any preceding claim, characterised in that the closure (12) is opened to the initial extent by a spring mechanism (34).

11. An arrangement or method according to any preceding claim, characterised in that the initial opening means (34) is an electric actuator.

12. An arrangement or method according to any preceding claim, characterised in that the controlled opening mechanism (18) is a gas spring.

13. An arrangement or method according to any preceding claim, characterised in that the closure (12) is an openable motor vehicle door or lid.

14. An arrangement according to claim 13, characterised in that the door is a hatchback (12).

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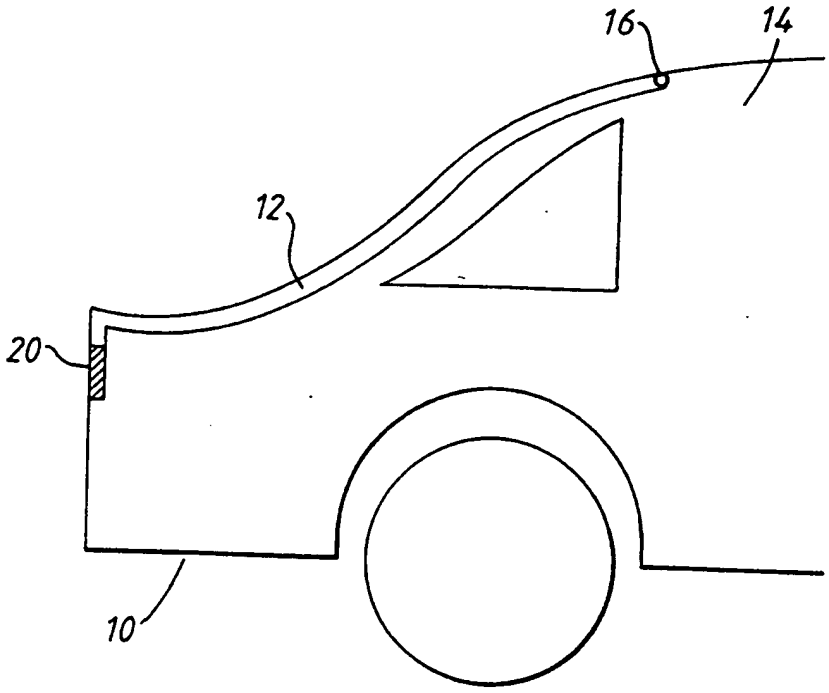

Fig. 1

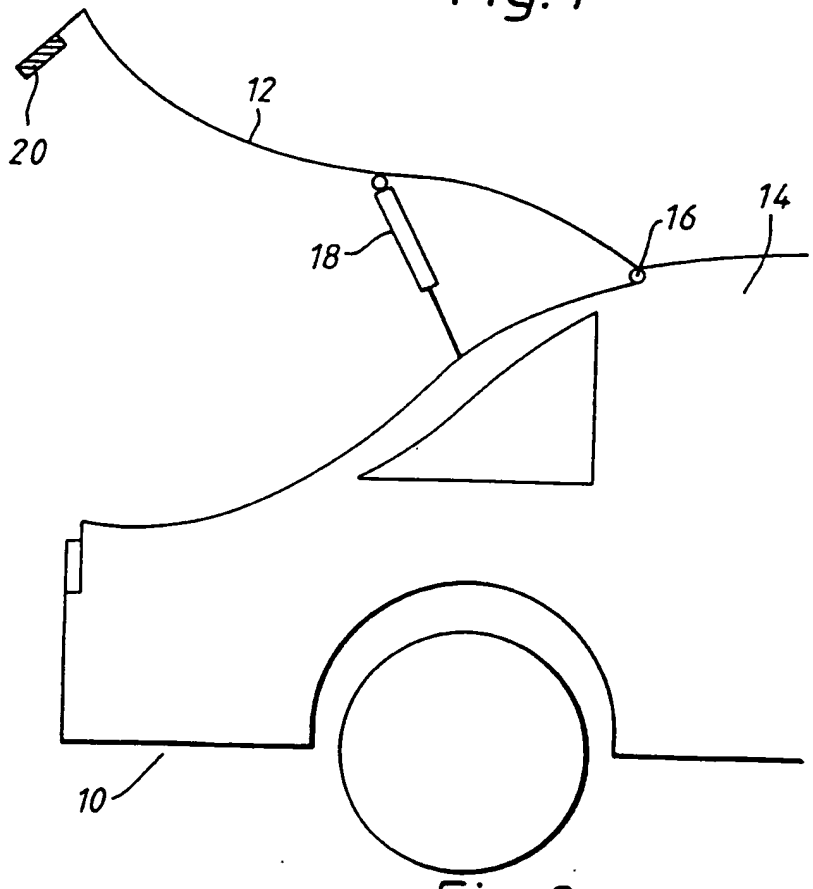

Fig. 2

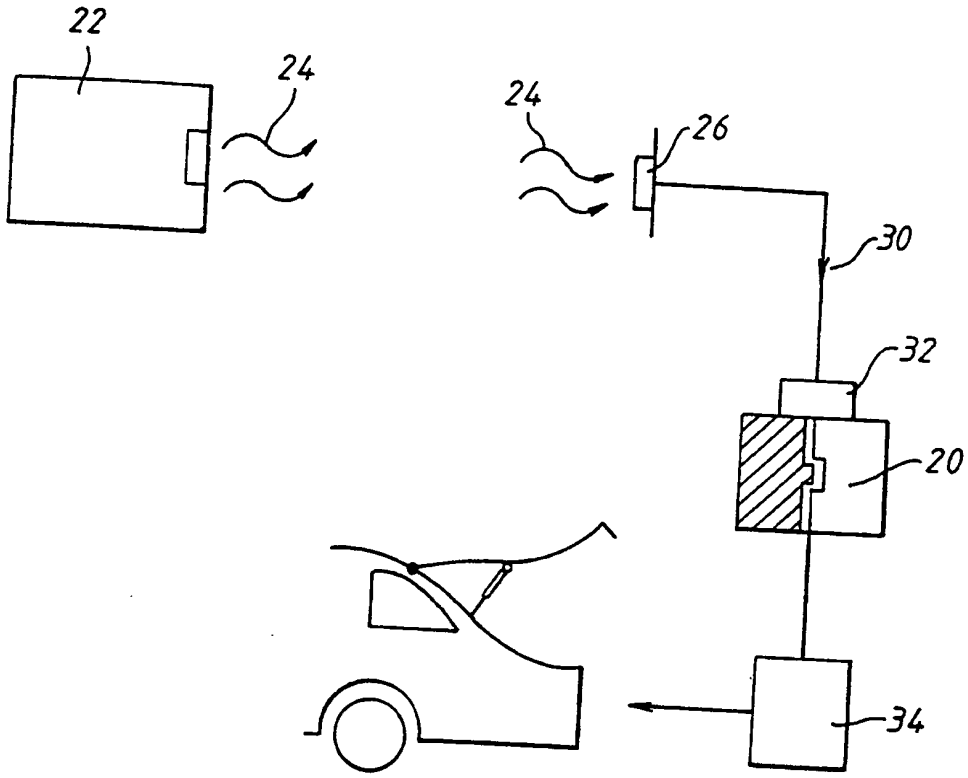

Fig. 3

INTERNATIONAL SEARCH REPORT

In' nal Application No
PCT/GB 96/01453

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 E05B65/19 E05F1/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 E05B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	US,A,4 739 585 (PICKLES) 26 April 1988 see the whole document ---	1,4,10, 11 2,3,5-9, 12
Y	WO,A,92 14018 (AUDI AG) 20 August 1992 see the whole document ---	2,3,5,6, 12
Y	DE,A,42 18 798 (MERCEDES BENZ AG) 9 December 1993 see the whole document ---	7-9
X	US,A,4 746 153 (COMPEU ET AL.) 24 May 1988 see the whole document --- -/--	1,4,11

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
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Name and mailing address of the ISA	Authorized officer
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Information on patent family members

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